

**FIRST
LEGO
LEAGUE**

EXPLORE

TEAM MEETING GUIDE



Introduction

Welcome to **FIRST® LEGO® League Explore!**

In **FIRST® LEGO® League Explore**, teams focus on the fundamentals of engineering as they explore real-world problems, learn to design and code, and create unique solutions made with LEGO® bricks and powered by LEGO® Education SPIKE™ Essential.

FIRST LEGO League Explore is one of three divisions by age group of the **FIRST LEGO League** program. This program inspires young people to experiment and grow their confidence, critical thinking, and design skills through hands-on learning. **FIRST LEGO League** was created through an alliance between **FIRST®** and **LEGO® Education**.



FIRST® DIVESM presented by Qualcomm and **SUBMERGEDSM**

Welcome to the **FIRST® DIVESM** presented by Qualcomm season. This year's **FIRST LEGO League** challenge is called **SUBMERGEDSM**.

This season, children will learn about how and why people explore the oceans. Our discoveries beneath the ocean surface teach us how this complex ecosystem supports a healthy future for the plants and animals that live there.

During each session, teams will experience the engineering design process. There is no set order for this process, and they may go through each step several times in a single session. This means that during a session, children will be exploring the theme and ideas, creating solutions, testing them, iterating and changing them, and then sharing what they've learned with others.

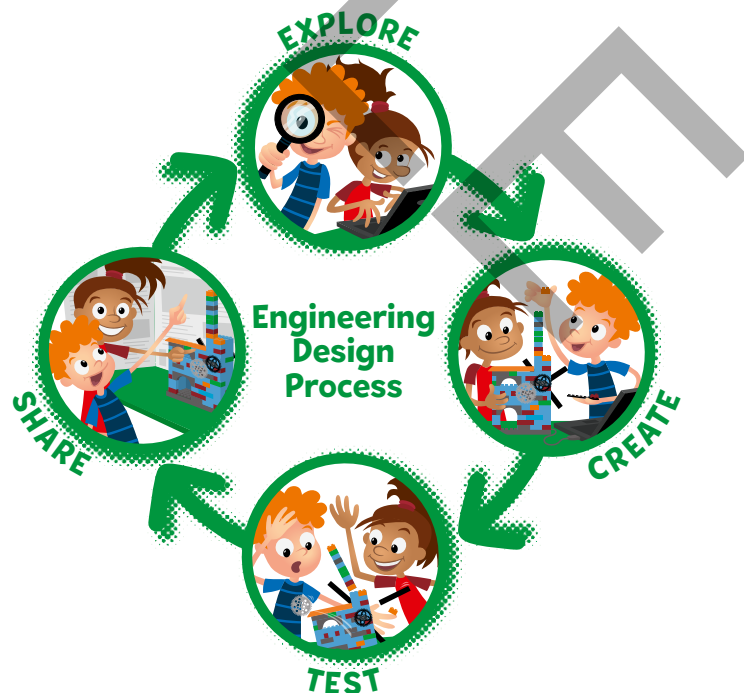
More than 80% of the ocean remains unexplored, offering curious minds deep opportunities to dive into expeditions.



Working in Teams

Children work together in teams of up to six members using pieces from the LEGO Education SPIKE™ Essential set and an Explore set. Teams will collaborate and communicate to build, learn, and play together.

Children should be encouraged in every session to work with their teammates, listen to each other, take turns, and share ideas and pieces.



What Does the Team Need?

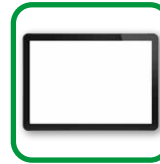
LEGO® Education Set

LEGO® Education SPIKE™ Essential Set

Note: Other LEGO Education sets such as WeDo 2.0 are also allowed.

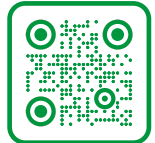


Electronic Device



Your team will need a compatible Bluetooth-enabled device like a laptop, tablet, or computer. Scan the QR code to view system requirements and download software.

Scan here for system requirements and software download



SUBMERGEDSM Explore Set

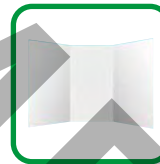
Each team will get one SUBMERGEDSM Explore set. Leave the LEGO® pieces in their bags until the sessions in which they are needed.

Two printed books contain the building instructions for the Explore model.



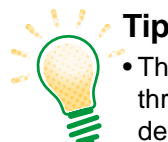
Team Poster Supplies

Each team will need a large poster board and various art supplies and materials in Sessions [10-11](#).



	Submarine	Motor and Hub Pieces*	Sunline Zone Pieces	Twilight Zone Pieces	Abyssal Zone Pieces	Prototyping Pieces
Bag	1, 2	3	4	5	6	7, 8, 9, 10, 11
Book	1	2	2	2	2	-

*The motor and hub are part of the SPIKE Essential set. Bag 3 contains bricks needed to attach these pieces to the submarine model in the Explore set.



Tip

- The prototyping pieces and baseplates are used throughout the sessions to build solutions to the design challenges.

Sessions at a Glance

Every session starts with an introduction and ends with a share activity. Details for these activities are given in the session pages that follow, along with notes and tips to help you run the session.

Session 1 – Dive In!

- Explore SUBMERGEDSM Theme
- Build Submarine Model
- Free Build

Session 2 – Ocean Layers

- Build Sunlight/Twilight/Abyss Models
- Explore Ocean Layers

Session 3 – Sunlight Zone

- Coding Lesson 1
- Explore Sunlight Zone

Session 4 – Twilight Zone

- Coding Lesson 2
- Explore Twilight Zone

Session 5 – Abyssal Zone

- Coding Lesson 3
- Explore Abyssal Zone

Session 6 – Deep Sea Discovery

- Build Unknown Creature
- Build Artificial Habitat

Session 7 – Exploration Station

- Build Exploration Station
- Explore Jobs and Technology

Sessions 8 & 9 – Team Model

- Design Team Model
- Build Team Model

Sessions 10 & 11 – Team Poster

- Design Team Poster
- Create Team Poster

Session 12 – Prepare for Event

- Finish Team Model and Poster
- Practice Sharing

CELEBRATE AT A FESTIVAL!

Session 1

Outcomes

- The team will use discovery to explore the SUBMERGEDSM theme and share what they know about the oceans.
- The team will build different things found in the ocean and the submarine from the Explore set.

Guiding Questions

- What did the Explore story make you think about?
- What plants and animals live in the ocean?
- How do people explore the oceans?

Session Tips



- 1 Scan here to find more resources you can use with your team.
- 2 Look ahead at the next few sessions to see which ocean environments will be discussed and share with the team to help them generate ideas.
- 3 Writing and drawing space is provided throughout the notebook for each child to capture their thoughts and ideas.

Extension

- Have the team research ocean discoveries and learn about the technology that was used.
- Do an ocean-themed show-and-tell activity with the team.

Introduction (10 minutes)

Let's Discover

- Read the definition for **discovery** to the team (see [page 5](#)).
- Talk about what **discovery** is. Have the team provide examples of this Core Value.
- Extension: Have everyone draw themselves using **discovery** on the Core Values page in the *Engineering Notebook*.

Session 1

Activity 1 Tasks

- 1 Read the Explore story to learn about the SUBMERGEDSM theme.
 Talk about what you know about the oceans with your teammates.
- 2 There are many ocean mysteries left to explore. Think about what part of the oceans you and your teammates would want to explore and hope to discover.
 List your questions about the ocean below.

Your team needs:



What did you learn from reading the Explore story?

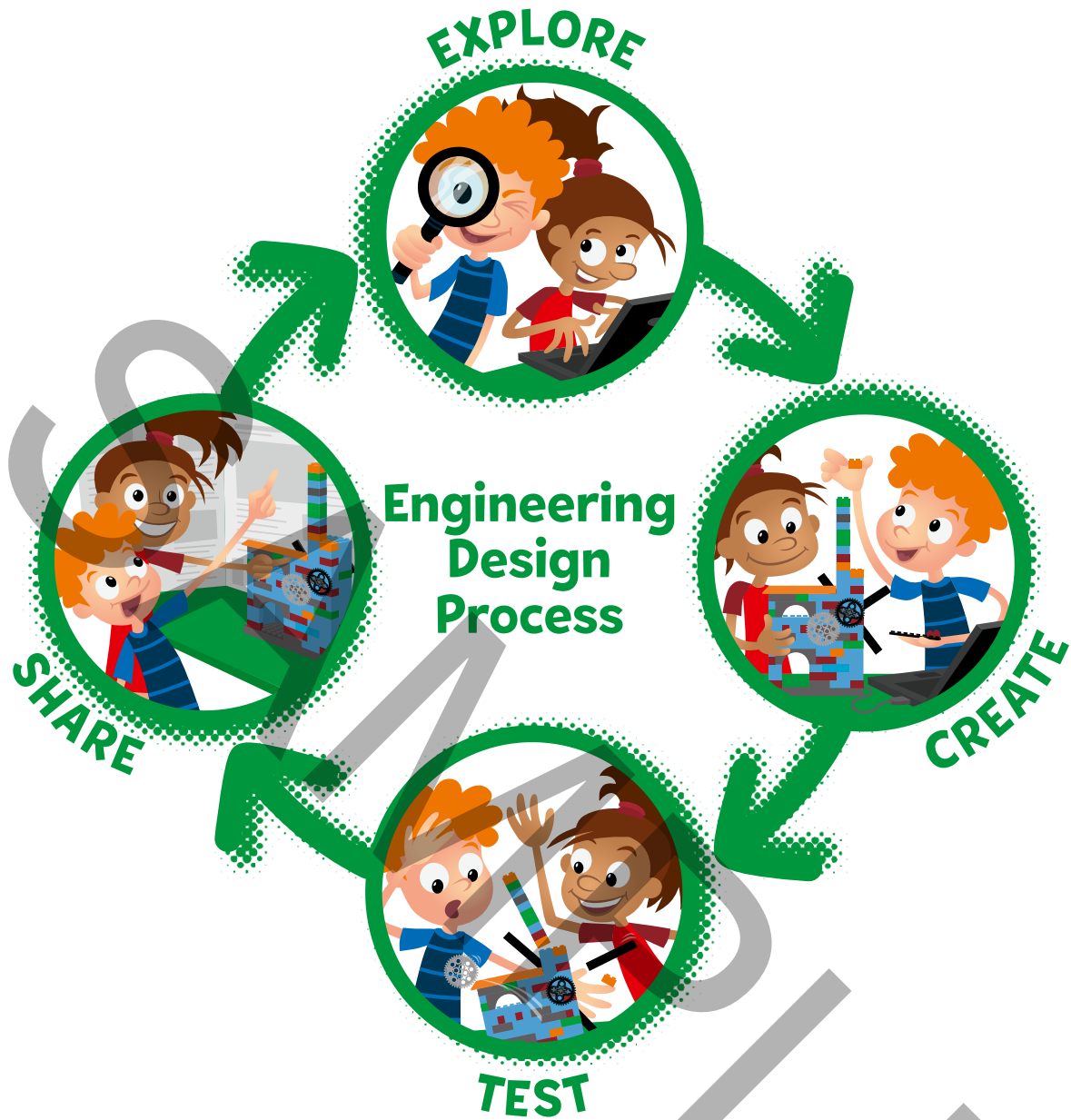
What animals or objects did you recognize in the Explore story?

More than 80% of the ocean has never been mapped, explored, or even seen by humans!

What animals and objects do you want to learn more about?

3





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EXPLORE

ENGINEERING NOTEBOOK



You will develop new skills as you work together.

Core Values

Draw or write an example of your team using each Core Value when directed in the sessions.

DISCOVERY

We explore new skills and ideas.

INCLUSION

We respect each other and embrace our differences.

INNOVATION

We use creativity and persistence to solve problems.

TEAMWORK

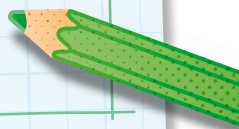
We are stronger when we work together.

IMPACT

We apply what we learn to improve our world.

FUN

We enjoy and celebrate what we do!



Session 1

Activity 1 Tasks

- Read the Explore story to learn about the SUBMERGEDSM theme.
- Talk about what you know about the oceans with your teammates.
- There are many ocean mysteries left to explore. Think about what part of the oceans you and your teammates would want to explore and hope to discover.
- List your questions about the ocean below.

Your team needs:



What did you learn from reading the Explore story?

What animals or objects did you recognize in the Explore story?

More than 80% of the ocean has never been mapped, explored, or even seen by humans!

What animals and objects do you want to learn more about?

Your team needs:



An autonomous underwater vehicle (AUV) is like a small submarine that doesn't need a person to drive it. A remotely operated vehicle (ROV) requires a person to drive it, and it is connected to the ship with cables.



Dive In!

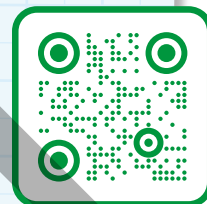
Activity 2 Tasks

- Build the submarine from the Explore set using Bags 1 and 2.
- Talk about the different parts of the submarine and what they might be used for.
- Think of something your submarine might discover in the ocean.
- Use the space below to draw your ideas.

Challenge

- Use the prototyping pieces to build animals, plants, or unknown object that your team wants to learn about.
- Share your ideas.

My ideas:



Scan me to see a video of the submarine model.

Team Journey



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